

ATTACHMENT #33

**FMCSA's FMVSS BORDER CHECK
SOFTWARE INFORMATION**

(13 Pages)

FMVSS Border Check

VIN: 3cer8j22x55103537

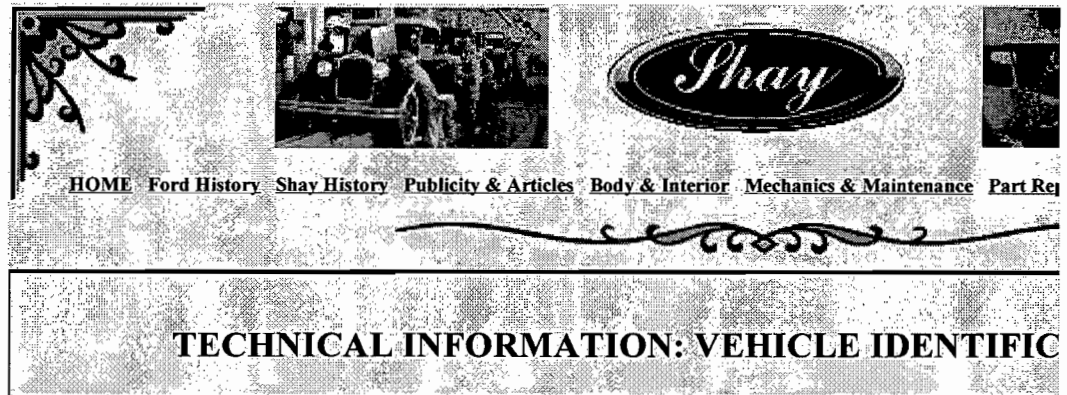
☐ Vehicle has FMVSS or CMVSS label

Check Digit: VALID

Compliance: COMPLIANT

The VIN, if recorded accurately, indicates FMVSS compliance at the time of manufacture.

Validate Clear Fields Exit



Since 1954, American automobile manufacturers have used a Vehicle Identification Number for the purpose of vehicle description and identification. The early VINs came in a wide array of depending on the individual manufacturer.

VIN patterns prior to 1981 vary from one manufacturer to the other. Ford used 11 digits, GM and Shay used 10. Distribution of letters and numbers was not standardized, nor was the meaning that could be said with a certain degree of certainty is that the last 4 to 7 numbers correspond to the "number".

In a Shay, if your second digit is the number "0", it is possible that this corresponds to the price your guess is as good as mine...!

Beginning with model year 1981, the National Highway Traffic Safety Administration, U.S. Department of Transportation, requires that all over the road vehicles sold must contain a 17-character VIN. This standard establishes the following information comes from the National Highway Traffic Safety Administration's Website.

VIN coding has so many variables that it comprises a complete book in itself to list all the meanings of manufacturers, etc. Provided below is a quick guide to the VIN structure. If you should like to try to contact the National Insurance Crime Bureau (NICB) by website at <http://www.nicb.org> 2430. The NICB publishes various identification manuals.

The following information refers only to the new 17-digit VINs used on Shays. If you have a vehicle used previously, please tell me what you know. I'll be glad to expand this text.

	Position	1	2	3	4	5	6	7	8	9	10	11
Example: my Shay:	VIN #	1	H	W	A	3	1	A	A	5	A	

Digit 1: Nation of origin

"1" = U.S., "2" = Canada, "W" = West Germany

Digits 2: Manufacturer

"C3" = Chrysler, "FA" = Ford, "ME" = Mercury, "H" = presumably a Shay.

Digit 3: Model

"W" = Passenger car, "X": Pick-Up

Digits 4 to 8: Vehicle Description Series

These digits represent items such as the car or truck line, series, body type, restraint system, etc. At the manufacturer's discretion, they are not always in the same order. For example, General Motors line series, position (6) for body style, position (7) for the restraint system (type of seatbelts, etc.). On the other hand, Ford uses position (4) for the restraint system, (5) for the designation, (6) for the engine. Let's presume that Shay used the same order as Ford did:

Digit 4: Restraint system

"A" = Lap belts only , "I" = Lap & shoulder belt (?), "B" = Passive Restraint System
 "L" = Dual Airbags

Digit 5: Designation

"2" = Super Deluxe Model A (twin sidemounted spares), including Special Edition (Golden Oldie and College Classic)

"3" = Deluxe Model A (one spare left side mounted)

"4" = Standard Model A (one spare rear mounted)

"C" = Thunderbird

Digits 6 & 7: Car Line, Series and Body Type

"1A" = Model A, "21" = Thunderbird

Digit 8: Engine

"A" = 2.3 liter 4 cylinder, "3" = 3.8 V6, "F" = 5.0 V8

Digit 9: Check Digit

This digit is mathematically derived from values assigned to the other 16 digits. The check digit is a valid number, or not. See the check digit formula information below.

Digit 10: Year of Manufacture

There is a common table that all manufacturers use. A look at 25 years is as follows (note the

1980 A	1985 F	1990 L	1995 S	2000 Y
1981 B	1986 G	1991 M	1996 T	2001 1
1982 C	1987 H	1992 N	1997 V	2002 2
1983 D	1988 J	1993 P	1998 W	2003 3
1984 E	1989 K	1994 R	1999 X	2004 4

Digit 11 - Assembly Plant

"E" = Probably corresponds to the Elm Street plant in Battle Creek, Michigan. In the case of cars that are shared by two different plants. For example a passenger car assembled in the General Motors plant in Fujisawa Japan.

Digits 12 to 17: Production Number

This is the sequential number that is assigned to the vehicle as it leaves the plant. It tells you the order in which the car was produced. Car lines can start anywhere between 000000 and 999999. Furthermore, please note that the sequential production number of a car exceeded the published total car output for that model in a production number gap, for whatever reason. Or maybe some prototypes were included in the production number is wrong... who knows?

THE VIN CHECK DIGIT FORMULA

The check digit of a Vin appears in the 9th position and provides a way to verify the validity of the VIN. The check digit is calculated by carrying out the following mathematical computation:

- (1) Assign to each number in the VIN its actual mathematical value and assign to each letter

Table 1 - Number Values for Vin Letters

A - 1	G - 7	N - 5	V - 5
B - 2	H - 8	P - 7	W - 6
C - 3	J - 1	R - 9	X - 7
D - 4	K - 2	S - 2	Y - 8
E - 5	L - 3	T - 3	Z - 9
F - 6	M - 4	U - 4	

- (2) Multiply the assigned value for each VIN character in the Vin by the Position weight factor

Table 2 - Vin Position and Weight Factors

Vin Position	Weight Factor	Vin Position	Weight Factor
1st	8	10th	9
2nd	7	11th	8
3rd	6	12th	7
4th	5	13th	6
5th	4	14th	5
6th	3	15th	4
7th	2	16th	3
8th	10	17th	2
9th	(check digit to be calculated)		

(3) Add the resulting products and divide this total by 11.

(4) The numerical remainder is the check digit. If the remainder is 10 the letter 'X' shall be used. If the correct numeric remainder, zero through nine (0-9) or the letter 'X' shall appear in the VIN position.

(5) A sample check digit calculation is as follows for the following Vin:

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
Vin Character:	1	H	W	A	3	1	A	A	5	A	E	0	0	6	0							
Assigned Values:	1	8	6	1	3	1	1	1	1	5	0	0	6	0	8							
Weight Factors:	8	7	6	5	4	3	2	10	9	8	7	6	5	4	3							
Products:	8	56	36	5	12	3	2	10	9	40	0	0	30	0	24							
Add Products:	8+	56+	36+	5+	12+	3+	2+	10	+	9+	40	+	0	+	0	+	30	+	0	+	24	+

Divide the Sum of Products by 11: $247/11 = 22$ and $5/11$.

The remainder is 5, therefore the check digit designation is "5".

SHAY OWNERS' CARS VIN NUMBERS: It has helped us in identifying general trends (exceptions) as to production time of cars according to their Vin as well as type of instrument cluster. Owners of 1 gauge cars describe theirs like being a Jeep CJ-5 gauge.

FMVSS.message

FMVSS Border Compliance - Software Program Installation Notes

This self-extracting program will copy two files to C:\FMVSS as a default location which you can change in the next unzipping step.

If you change the default location, then you will need to also change the location mentioned in the next step below to be the same location.

The enclosed dll file will need to be registered on the computer from START/RUN: regsvr32 C:\FMVSS\FmvssVinChecker.dll.

Sample VINs to demo the program:

1M1AA12Y5TW057547 - Mack commercial vehicle with a manufacture year of 1996 and manufactured at a plant in the US. FMVSS compliant. Checkdigit is valid.

3HTMKAAN03N583759 - International commercial vehicle with a manufacture year of 2003 and manufactured at a plant in Mexico. FMVSS compliant. Checkdigit is valid.

3FEXF70J5SJA03130 - Ford commercial vehicle with a manufacture year of 1996 and manufactured at a plant in Mexico. FMVSS non-compliant. Checkdigit is valid.

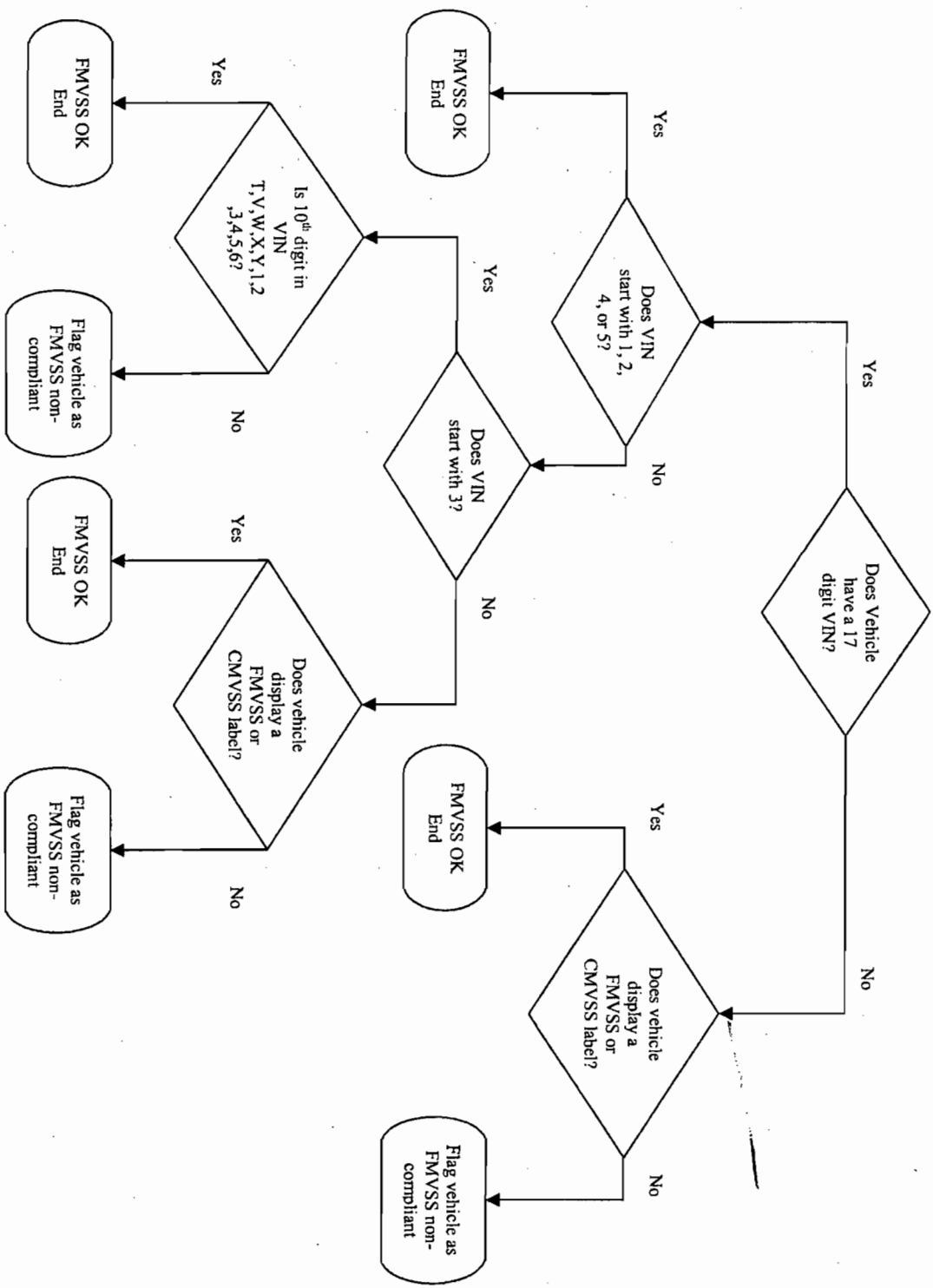
3B4DH173XB2157342 - Dodge commercial vehicle with a manufacture date of 1981 and manufactured at a plant in Mexico. FMVSS non-compliant. Since the checkdigit returns as Invalid, the VIN recorded should be checked again, if possible, since some part of the VIN was transcribed incorrectly and this could be the year digit which was recorded incorrectly.

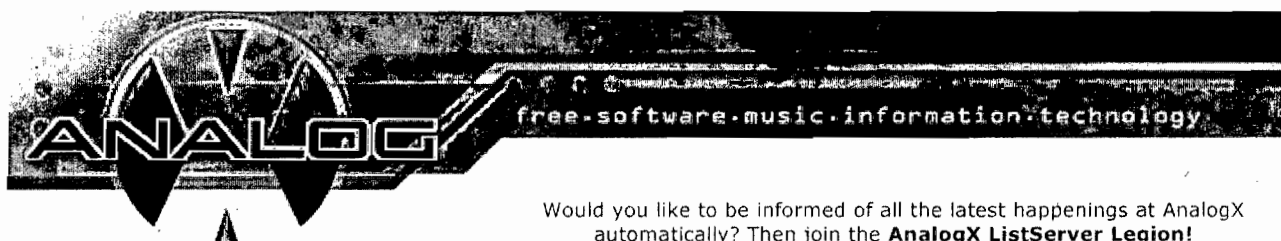
FMVSS Border Compliance Software

Created for Federal Motor Carrier Safety Administration

Version b1.1 (beta edition)

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Vehicle Identification Number (VIN): **Vehicle Identification Number:**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3	C	E	R	8	J	2	2	X	5	5	1	0	3	5	3	7

Description	Position	Raw Data	Decoded Data
Region:	1	3	North America
Country:	1-2	3C	Mexico
Manufacturer:	2-3	CE	Unknown
Model Specific:	4-8	R8J22	Unknown
Check Digit:	9	X	Valid
Year:	10	5	2005
Assembly Plant:	11	5	5
Serial Number:	12-17	103537	103537

SOFTWARE

Overview
FAQ
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Programming
System

MUSIC

MP3's
Studio
Press
Discography

Last updated on Sunday, December 16, 2001 02:14:56 PM PST

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Frank, Walter (CSC)

From: Frank, Walter (CSC)
To: Vasser, Jamie <FMCSA> <FMCSA>
Cc: Kelly, Rosemarie C; Runyan, John (CSC)
Subject: RE: FMVSS VIN Analysis
Attachments:

Sent: Thu 2/8/2007 2:39 PM

Estimate for adding FMVSS Verification property to VINChecker.pas (VIN Validation code)

Background

Currently there is a unit VINChecker.pas that performs rudimentary vehicle VIN validation [a) is the VIN proper length, b) has only valid characters and c) passes the VIN checksum calculation]. The request is to perform additional processing to determine if the inspector needs to verify the vehicle satisfies FMVSS (**Federal Motor Vehicle Safety Standards**) This verification a vehicle meets FMVSS can be performed on a VALID VIN by examining the Country of Manufacturer, and the Vehicle Year (although starting in 2010 - less than 3 years from now - there will be ambiguity in the VEHICLE YEAR, as the year position has a 30 year span - the year 1980 and 2010 will BOTH be represented by "A"....)

Requirement

Add a property to the VINChecker class - this may need to be an enumerated value (instead of a simple Boolean true false). If a VALID VIN has been provided to the VINChecker class, then the enumerated **FMVSafetyStatus** property (or some other name), will be available for the application code to determine if the VIN represents a vehicle meeting FMVSS standards.

FMCSA has provided a PDF of the necessary conditions to pass FMVSS

a) The VIN MUST be VALID (i.e. 17 valid characters and passes Checksum)

AND

b1) Country of Manufacture (first digit) is 1,2,4 or 5

OR

b2) Country of Manufacture (first digit) is 3 AND Vehicle Year per VIN is 1997 or later.

Note, due to the wrapping effect of vehicle year characters starting in 2010, application also supplies the vehicle year to the VIN Validate routine. This passed in year will be used to cross check with the VIN and eliminate ambiguity that will start in 2010 vehicles.

If the country is not 1 through 5 (a non North American Vehicle) or Mexican (Country = 3 prior to 1997) then the FMVSafetyStatus property will be set require the inspector to determine if an FMVSS or CMVSS plate exists for the vehicle.

Estimate

Modifying, unit testing, peer reviews and required release process flow requirements for the VIN code is estimated to require 2 man days. This includes modifying the test application to check and report the FMVSafetyStatus property.

SAFETYNET

There will need to be a change to the Vehicle Grid (as each unit is subject to the FMVSS check). To store this entry will also require changing the INSP_VEHICLE table. At the present time, and until MCMIS is modified to accept an FMVSS value for each unit, the upload to MCMIS code will not be changed.

The Driver Vehicle Examination Report (SNR003) will be modified to include this status field.

If the vehicle does not meet the standard, then the inspector needs to provide a "yes no" indication that an FMVSS plate was located on the vehicle.

Additional business rules (for example warning that a Level 1 inspection SHOULD be conducted if the vehicle is not FMVSS compliant) may need to be developed.

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Other Systems

ASPEN inspections flow to SAFER and SAFETYNET via the FMCSA vehicle XML Schema Inspection-XML.xsd.

First the schema needs to be modified to include this new field - the type, allowed values and placement in the schema need to be determined.

Once the schema is modified (and it would mean moving from the current schema 2.1 to 2.2), then database changes in SAFER, ASPEN and SAFETYNET would be needed, and code changes to process the field.

An approximate estimate for SAFETYNET would be two weeks of work....

Finally, since PIQ and/or Query Central access the SAFER Web Service to display past inspection reports, these systems may be affected.

-----Original Message-----

From: jamie.vasser@dot.gov [mailto:jamie.vasser@dot.gov]

Sent: Thursday, February 08, 2007 1:27 PM

To: Frank, Walter (CSC)

Cc: Kelly, Rosemarie C; Runyan, John (CSC)

Subject: RE: FMVSS VIN Analysis

That's the one I was thinking of. Thank you, Sir Rat of Pack.

I sent that response, I never got any acknowledgement back, and I assumed it was a dead issue.

So, quick estimate, to add the Boolean return value for FMVSS compliance but not store the value (yet), what would it take?

From: Frank, Walter <VOLPE>

Sent: Thursday, February 08, 2007 1:21 PM

To: Vasser, Jamie <FMCSA>

Cc: Kelly, Rosemarie C <VOLPE>; Runyan, John <VOLPE>

Subject: FW: FMVSS VIN Analysis

Email message number two from the depths of the Archive

Note in particular "COULD" -- I do not recall this was a firm commitment...

By adding a few lines of code, the routine *could* return a True/False value to indicate the FMVSS compliance. However, as we currently have no storage mechanism for this value, we'll refrain on adding this code at this time

-----Original Message-----

From: jamie.vasser@dot.gov [mailto:jamie.vasser@dot.gov]

Sent: Thursday, June 08, 2006 11:19 AM

To: tom.kozlowski@dot.gov

Cc: william.quade@dot.gov; larry.minor@dot.gov; Marcelo.Perez@dot.gov; michael.huntley@dot.gov; John.Gray@dot.gov; carla.vagnini@dot.gov; arturo.ramirez@dot.gov; Rosemarie.C.Kelly@volpe.dot.gov; brenda.lantz@dot.gov; Gary.Talpers@ndsu.edu; Walter.Frank@volpe.dot.gov

Subject: RE: FMVSS VIN Analysis

This is a short overview of how the Aspen / SAFETYNET VIN validation routine is being implemented at this time. (This does not preclude future enhancements.) I correct my previous statement that we are currently checking for FMVSS compliance.

We based these validations on 49 CFR 565 (NHTSA) "Vehicle Identification Number Requirements", and in particular, 565.4, "General Requirements".

Step 1: Verify the VIN input is 17 characters long for vehicle model years 1981 and later. If not, warn the user to verify the input. *If the VIN is not 17 characters long, no further validations can take place.*

Step 2: Verify the VIN does not contain "illegal" characters. (565.4(g): Each character in each VIN shall be one of the letters in

the set: [ABCDEFGHJKLMNPRSTUVWXYZ] or a numeral in the set: [0123456789]). Thus "illegal" characters are the letters "I" ("eye"), "O" ("oh"), and "Q" ("cue"). No other characters or punctuation are allowed. If the VIN contains one of these characters, warn the user.

Step 3: Perform the check digit calculation as defined in 565.6(c). This calculation determines if the other 3 sections of the VIN - manufacturer, vehicle attributes, model year/assembly plant/sequential production number - are valid character combinations.

The validation routine also contains methods to extract the World Manufacturer Identifier (see ISO 3780), the vehicle year, the country code, and manufacturer.

By adding a few lines of code, the routine *could* return a True/False value to indicate the FMVSS compliance. However, as we currently have no storage mechanism for this value, we'll refrain on adding this code at this time. It would be a fairly easy process to run a report based on MCMIS data to obtain the information from the uploaded VINs. *(Or, as a temporary measure, just display a message to the inspector that the VIN indicates possible non-compliance with FMVSS?)*

There's your "paragraph or two".

From: Kozlowski, Tom <FMCSA>
Sent: Tuesday, June 06, 2006 9:09 AM
To: Vasser, Jamie <FMCSA>
Cc: Quade, William <FMCSA>; Minor, Larry <FMCSA>; Perez, Marcelo <FMCSA>; Huntley, Michael <FMCSA>; Gray, John <FMCSA>; Vagnini, Carla <FMCSA>; Ramirez, Arturo <FMCSA>
Subject: RE: FMVSS VIN Analysis

Thanks. Will the results of the VIN checks - the 17 digit check as well as the FMVSS compliant/non-compliant check - be uploaded to MCMIS?

Sooner or later the OIG will be asking us what we did. I'd appreciate it if you could just write a paragraph or two on the Aspen changes and how they are intended to be used (will we be providing information to the filed of this new check and what they should do?)

-----Original Message-----

From: Vasser, Jamie <FMCSA>
Sent: Monday, June 05, 2006 9:54 AM
To: Kozlowski, Tom <FMCSA>
Cc: Quade, William <FMCSA>; Minor, Larry <FMCSA>; Perez, Marcelo <FMCSA>; Huntley, Michael <FMCSA>; Gray, John <FMCSA>; Vagnini, Carla <FMCSA>
Subject: RE: FMVSS VIN Analysis

OK. We're implementing some basic VIN edit checks in Aspen for the August release. This should encourage the users to pay a little more attention to it. One of the main checks we're implementing is that if the user has input the vehicle year as 1981 or later, then Aspen will show a warning if the VIN is less than 17 characters.

The VIN is transferred thru the system and stored without alteration in MCMIS, so this data will be available for analysis.

From: Kozlowski, Tom <FMCSA>
Sent: Friday, June 02, 2006 11:00 AM
To: Vasser, Jamie <FMCSA>
Cc: Quade, William <FMCSA>; Minor, Larry <FMCSA>; Perez, Marcelo <FMCSA>; Huntley, Michael <FMCSA>; Gray, John <FMCSA>; Vagnini, Carla <FMCSA>
Subject: FW: FMVSS VIN Analysis

Both Larry and Bill Quade "refreshed" my memory. As noted in Larry's note we need to capture in MCMIS the information on FMVSS compliance (or non-compliance) that is recorded in ASPEN. Will it be uploaded to MCMIS? Ideally, it would be preferable if the FMVSS non-

(11)

compliance information could be consolidated in MCMIS so that automatic reports would be sent to the appropriate division office identifying those motor carriers using (or potentially using) non-complying vehicles. The division office then could take the appropriate action.

However, short of that and if the information is uploaded to MCMIS - would it be possible to produce a report, say on a quarterly basis, using the data from all the inspections that had FMVSS non-complying vehicles and have that info aggregated by carrier and then sorted by appropriate servicing division office? Such a report could then be sent to the office and appropriate action taken.

-----Original Message-----

From: Minor, Larry <FMCSA>

Sent: Friday, June 02, 2006 9:28 AM

To: Kozlowski, Tom <FMCSA>; Vasser, Jamie <FMCSA>

Cc: Perez, Marcelo <FMCSA>; Gray, John <FMCSA>; Quade, William <FMCSA>; Huntley, Michael <FMCSA>

Subject: RE: FMVSS VIN Analysis

I thought the plan was to capture the information so that we could identify the Mexico-domiciled motor carriers that "may" be operating vehicles that were not originally manufactured to comply with the FMVSSs in effect at the time the vehicle was manufactured. If there was evidence of a pattern of operating vehicles that do not meet the FMVSSs, the operating authority or certificate of registration could then be suspended or revoked for providing false information on the application for operating authority/certificate of registration. Mexico-domiciled carriers must certify that they are knowledgeable about the FMVSSs and that all of the vehicles they will use to transport passengers or freight into the United States comply with the FMVSSs in effect at the time the vehicle was manufactured.

So, we would not be prohibiting specific vehicles from operating in the United States. Rather, we would note the operation of such vehicles as part of a pattern of activities that would prove the Mexico-domiciled motor carrier provided false information to FMCSA on its application.

Larry

-----Original Message-----

From: Kozlowski, Tom <FMCSA>

Sent: Thursday, June 01, 2006 5:33 PM

To: Vasser, Jamie <FMCSA>

Cc: Minor, Larry <FMCSA>; Perez, Marcelo <FMCSA>; Gray, John <FMCSA>; Quade, William <FMCSA>

Subject: RE: FMVSS VIN Analysis

We don't have a rule on this so we can't prohibit them from operating. Also, this is not one of the factors we are using in ITDS either. Let me check with the people who have a better memory than me. What's your time frame?

-----Original Message-----

From: Vasser, Jamie <FMCSA>

Sent: Wednesday, May 31, 2006 3:16 PM

To: Kozlowski, Tom <FMCSA>

Subject: FMVSS VIN Analysis

Following up on an email I sent a few weeks back, we'll be implementing the code in the next release of Aspen to verify if a VIN passes the test to be FMVSS compliant. My question to you is, if the VIN fails the FMVSS validation, then what? I believe there was a mention that the vehicle would be prohibited from operating within the US. If so, do we want Aspen to show some indication to the user?

Jamie Vasser
IT Project Manager
FMCSA IT Development Division
202-493-0215
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<http://infosys.fmcsa.dot.gov>